molift®

QUICK RAISER

CE

molift®
by Etac

TM04101 - English

TECHNICAL MANUAL

Contents

General advice ... 3
- *Explanation of symbols* ... 3
- *Safety regulations* ... 3
- *Liability* ... 3

Technical description ... 4
- *Chassis* ... 4
  - Motor with mounting plate and coupling ... 4
  - Motor control ... 4
  - Hand control ... 4
  - Emergency stop ... 4
  - Battery lamp and service indicator ... 4
  - Wheels ... 4
- *Lifting column* ... 5
  - Battery holder and batteries ... 5
  - Operating handle ... 5
  - Hand control ... 5

Service ... 6
- *Service* ... 6
  - Service light codes ... 6
- *Cleaning* ... 6
- *Troubleshooting* ... 6

Replacement of parts ... 7
- *Equipment* ... 7
- *Special tools* ... 7
- *Lifting motor, removing* ... 7
- *Lifting motor, fitting* ... 7
- *Wheels, removing and fitting* ... 7
  - Wheels on the legs ... 7
  - Ø100mm wheels ... 7
  - Ø115mm wheels ... 8
- *Replacing the electronics* ... 8
- *Replacing the contact points in the lifting column* ... 9
- *Replacing the contact points in the chassis* 9
- *Replacing the column wiper-brushes* ... 9
- *Faults in the lifting column* ... 9

Completing the job ... 10
- *Safety checks* ... 10
- *Keeping a log* ... 10

Inspection diagram after service and repair ... 11
- *Service:* ... 11
- *Safety Inspection* ... 11

Parts catalogue ... 12
- *Molift Quick Raiser 1 09* ... 12
- *Main Components* ... 13

Appendix B ... 14
- *Chassis w/ legs* ... 15

Appendix C ... 16
- *Lifting column* ... 17

Appendix D ... 18
- *Cover with electronics QR2* ... 19
- *Battery holder* ... 19

Appendix E ... 20
- *Knee support complete* ... 21

Appendix F ... 22
- *Electrical Diagram* ... 22

IMPORTANT!

The patient lifter is only meant to be used by qualified personnel.

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General advice

This technical manual contains important information about the lifter, including safety instructions. It is therefore essential to read it carefully before using and repairing the patient lifter.

Explanation of symbols

Locations in diagrams are referred as follows: **A**① A1 refers to Appendix A, location 1.

This symbol appears in the user manual next to all the information which concerns safety in the work-place and the risk of injury. Always follow these instructions carefully, paying due attention and caution.

This symbol indicates important information regarding the correct use of the equipment as described in this technical manual. If this information is not taken into account, malfunction or damage to the equipment may result.

This symbol draws your attention to especially useful information, which could help the user of this equipment to work more efficiently. This information may simplify procedures or clarify complications.

Safety regulations

Heavy, long and/or sharp objects will have to be lifted and handled when repairing the lifter. When assembling and removing parts, the lifter's stability may be affected with the risk of it overturning or falling over.

You are therefore advised to be attentive and careful!

Liability

Please read these operating instructions carefully before putting the product into operation. We assume no liability for damage or malfunctions resulting from failure to comply with the instructions. Warranty claims must be made immediately on detecting the defect. Remember to quote the serial number. Consumable parts are not subject to the warranty.

All technical information, data and instructions for operation contained in these operating instructions were up-to-date at time of print and are compiled on the basis of our experience and to the best of our knowledge. We reserve the right to incorporate technical modifications within the scope of further development of the product described in this manual. No claims can be derived from the information, illustrations or descriptions contained in these instructions. We assume no liability for any damage or malfunction caused by operating errors, non-compliance with these operating instructions or inappropriate maintenance. We expressly point out that only genuine Molift spare parts and accessories approved by us may be used. For safety reasons, the fitting and use of spare parts or accessories, which have not been approved, and unauthorised modification or conversion of the product, are not permitted. Etac AS will accept no liability for damages resulting from such acts.

With the exclusion of product liability, Etac AS is liable for faults or omissions on its part within the scope of the warranty obligations stated in the purchase contract. Claims for damages are excluded, irrespective of the legal reason from which such claims are derived. Only documentation belonging to the actual equipment is valid.

Any failure to comply with the safety regulations and precautionary measures stated in these operating instructions renders the declaration of conformity supplied with the system in accordance with Council Directive (93/42/EEC) concerning medical devices invalid.

Technical description

Chassis

The chassis consists of a steel-tube and steel-plate frame with a polyester seal, including legs. The side housings are constructed in vacuum-moulded ABS.

The chassis consists of:

- Motor with mounting plate and coupling
- Motor control card (PCB) for lifting
- Contacts for battery power
- Contact switch for manual control
- Emergency stop
- Charging indicator
- Wheels
- Side housings

Motor with mounting plate and coupling

Motor with worm gear (12 V DC) mounted inside the chassis. The coupling between the motor and column is engaged when the red arrow on the lower part of the column is in line with the upper part of the chassis. The motor must not be lubricated after leaving the factory.

Motor control

The motor control (electronic) has integral overload protection, which will cut off the current in the event of overloading. The current is cut off when the overload corresponds to approximately 17A above and 7A below. The motor therefore stops automatically with a vertical load of approximately 120 kg, which corresponds to a user weight of 160 kg.

Hand control

The contact switch for manual control is of the DIN type with special cables. This is located inside one of the side housings.

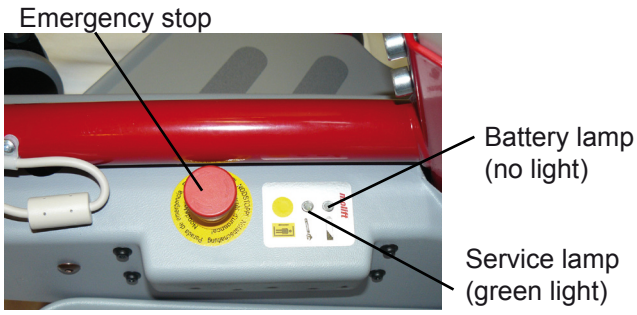
Emergency stop

The emergency stop, which is located on the top right side on the chassis, cuts the power supply to the motor. The button is pushed straight down to activate the emergency stop and is released by turning it clockwise.

Do not activate the emergency stop with your foot. This could damage the emergency stop switch!

Battery lamp and service indicator

On the right side of the chassis, in front of the emergency stop button, there are two LED (Light Emitting Diodes). One Service lamp which indicates when the lifter needs service (see Chapter on Service on page 8). The other LED is a Battery Lamp which lights up when the battery voltage drops below 12.2 volts. The diode will normally give no light, and will only light up when the battery needs charging.



Wheels

The lifter has three types of wheel. None requires lubrication:

Front wheels on the legs

There are 2 Ø50 mm wheels on each leg. The wheels are mounted to the chassis with a screw stud.

Back wheels

One wheel on each side, diameter 115mm. These wheels are fitted to the chassis with stud screws. They can be locked by a push-button.

Support wheels

One central wheel on each side of the lifter, diameter 100mm. These wheels are fitted to the chassis with straight-through screws.

Lifting column

The lifting column consists of:

- Aluminium section
- Column brushes
- Linear ball screw
- Ball nut (with integral ball bearings)
- Trolley
- Bearing race
- Motor coupling
- Contact for battery current
- Aluminium battery holder
- Fastening knob with lock-screw

The motor transfers power to the ball screw via the motor coupling. A ball nut runs along the ball screw. The trolley is attached to this ball nut, and the lifting arm is attaced to the trolley. When the motor turns the ball screw via the coupling, the ball screw moves the ball nut plus trolley upwards or downwards. There are tracks in the aluminium section for the wheels on the trolley to follow. The ball screw is factory-lubricated and requires no further lubrication. It is protected from dirt by two column wiper-brushes.

Battery holder and batteries

The battery pack is placed in a special aluminium holder on the lifting column. See also the instructions for the charger. Only use original Molift Batteries for Molift lifters.

Operating handle

The height of the operating handle (which consists of a curved steel tube) can be adjusted by means of a special bolt and knob so as to suit different users.

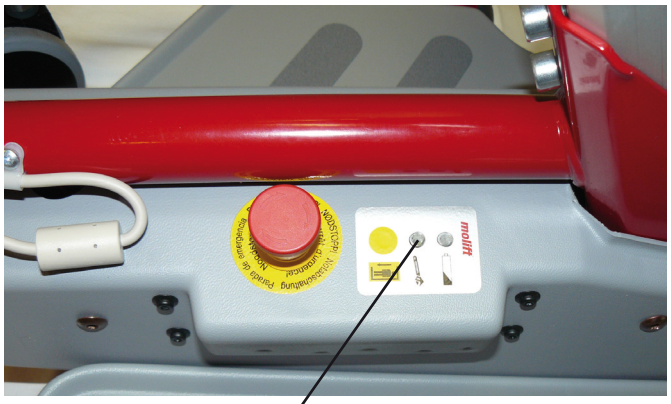
Hand control

The hand control has two buttons, for operating the lifter 'up' and 'down'. There is also a LED light which indicates when the batteries needs charging. If the diode lights up when the lifter is being operated, the battery needs charging. But there will still be sufficient remaining battery capacity for 1-3 normal lifts of 75 kg and there will always be sufficient remaining current for lowering the patient.

Service

Service

The lifter has a service lamp on chassis which will give a signal when service of the lifter is required. The service lamp gives a green light when the lifter can be used normally.



The electronics measures the operating time of the lifter, and after a specific time the service lamp will give a signal, first yellow light then red - indicating that the lifter needs service. Take contact with your local Molift service representative/dealer. The lifter can still be operated, but after a while an audible alarm will sound, to remind the operator that the lifter needs service immediately.

Service light codes

Service light	Mode
No light	Power saving
Green	Ready for use
Yellow	Book service
Red	Perform service
Red + sound	Perform service immediately
Flashing yellow	Overheating

Service includes control and change of worn or damaged parts.

The service partner uses the Molift Service Tool to read the data from the lifter, and for logging service and resetting the service LED. The owner is responsible to ensure proper logging and written verification performed by authorised service partner.

Cleaning

Detergents used should be pH-neutral. Do not use solvents or other strong fluids, which may damage or ruin outside surfaces or change the characteristics of lift materials. If disinfection is necessary, use isopropyl alcohol. Avoid using abrasives and corrosives.

Wash the outside with a damp cloth and a suitable detergent.

Troubleshooting

If the lift is not functioning, the first action is to check that the power supply is in order. Then check that the battery light is on and that the service light is not indicating a need for service. See the troubleshooting table in the user manual.

Should the troubleshooting table not yield a fault diagnosis, use your judgment and a process of elimination.

Only use spare parts from Molift.

It will be up to the repair engineer to make such assessments, so there is no need to describe any further fault-finding procedures.

Replacement of parts

Equipment

See the *Operator Manual* for accessories and equipment relating to the daily use of the lifter.

Special tools

No special tools are required.

The replacement of parts must only be carried out by authorised dealers!

Lifting motor, removing

You will need:

- Hex key 5mm

Procedure:

- Remove the lifting column
- Remove the motor housings **B**⑧ and **B**⑳ (ABS housings)
- Unscrew the three hexagonal screws **B**⑲ at the foot of the column which attach the motor to the chassis
- Disconnect the electric cables from the motor
- Pull the motor downwards then out from the chassis

Lifting motor, fitting

You will need:

- Hex key 5mm
- Loctite 243

Procedure:

- Follow the above procedure in the reverse sequence. Put Loctite 243 on the motor's three mounting screws before assembling, but only screw them in slightly. Check that the three rubber washers for these three screws are properly seated. Before fixing the motor in place, it should be centred in relation to the lifting column place the column in its correct position on the chassis to check this.
- Engage the lifting column and operate the motor until the runner-block on the ball screw comes all the way down and the motor stops. Only then should you tighten up the motor's mounting screws.
- The newly-fitted motor should be labelled with the date of fitting and the fitter's signature.
- Replace the side housings.

Wheels, removing and fitting

Wheels on the legs

The entire bracket plus castor wheel has to be replaced.

You will need:

- Pop rivets 4.8 x 16mm, plus tool
- Drill Ø 5mm

Procedure:

- Carefully drill out the pop rivets underneath the legs so as to release the wheel bracket. **B**⑭

Be careful not to damage the lifter when drilling out the pop rivets.

- Pull out the wheel bracket **B**⑭ from the leg.
- Position the new wheel bracket and check that the holes in the leg line up with the holes in the wheel bracket.
- Attach the wheel bracket with the pop rivets.
- Press the wheel into place if necessary.

Ø100mm wheels

You will need:

- Hex key, 5mm
- Loctite 2701
- Hot air gun

Procedure:

It will be necessary to heat the screw/bolt to loosen the Loctite applied during assembly.

Be careful when heating the screws. Use a nozzle on the hot air gun so as to limit the heated area if possible.

Remove the wheel by unscrewing the 8x50 screw with the Umbraco key. Fit the new wheel by following these procedures in reverse. Remember to fit the washer when assembling. Use Loctite 2701 to secure the screws.

Ø115mm wheels

You will need:

- 19mm spanner
- Loctite 2701
- Hot air gun

Procedure:

It will be necessary to heat the screw/bolt to loosen the Loctite applied during assembly.

Be careful when heating the screws. Use a nozzle on the hot air gun so as to limit the heated area if possible.

Use a 19mm spanner to remove the front wheel. Unscrew the wheel bolt and remove the wheel. Fit the new wheel with the bolt and 19mm spanner. Use Loctite 270 to secure the bolt.

Replacing the electronics

It will be necessary to copy settings from the old PCB in the lifter over to the new PCB before replacing by using the Molift Service Tool. NOTE! IF INFORMATION ON PCB IS LOST OR INCORRECT THE SETTINGS SHOULD NOT BE COPIED. In this case a programmed card must be ordered and placed in the lifter without copy settings.

Correct settings for Molift Quick Raiser when reading Product Info with Molift Service Tool are:

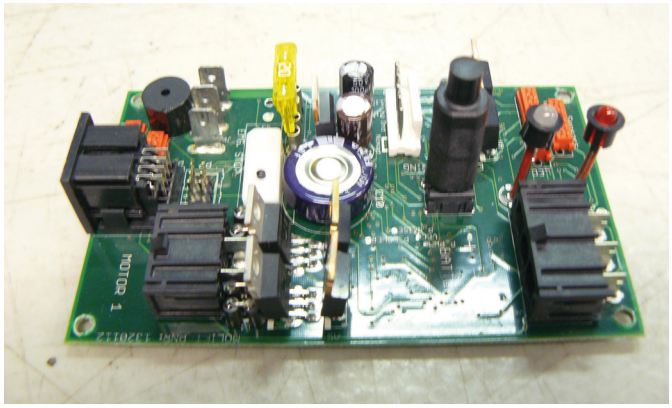
- "Product" - a 4 digit number (1801=Molift Quick Raiser 1).
- "Software version" - a 2-digit number
- Production year, week, batch number, serial number and maximum load should be according to main label.

You will need:

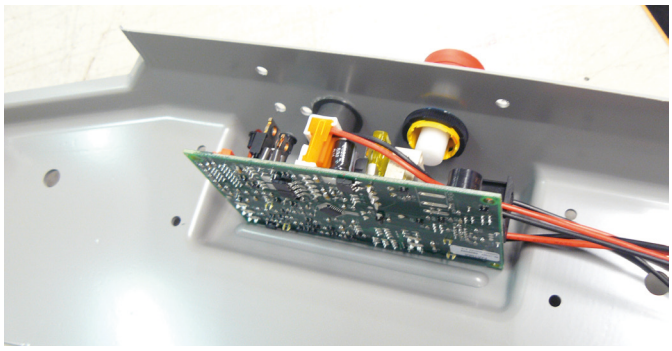
- Hex key, 5 mm
- Soldering iron

Procedure:

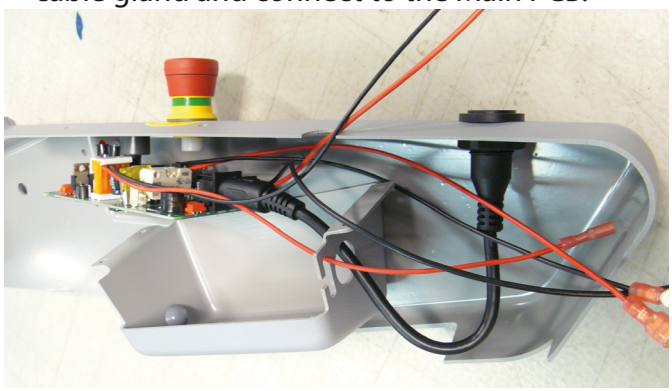
- Loosen the cover with electronics **B**⑳.
- Observe how all the wires are connected – if necessary mark the cables or make a drawing.
- Remove the 4 plastic rivets **B**⑧ and remove the PCB cover.
- Detach the printed circuit board from the slot in the side cover
- Disconnect all the wires from the Main PCB, and connect to the new Main PCB. Move all extensions and caps to the new Main PCB.



- Place the new Main PCB in the slot in cover.



- Put extension cable **B**⑬ through the hole with cable gland and connect to the Main PCB.



- Check that the LED lamps are positioned correctly when assembling the PCB cover to the side cover. Attach with 4 plastic rivets.
- Check that the lifter functions correctly.

Replacing the contact points in the lifting column

You will need:

- Posidrive screwdriver
- Soldering iron

Procedure:

- Loosen the posidrive screw in the groove at the bottom of the column so that the contact-holder **C**⑧ is released
- Pull out the holder carefully so that the wires are freed (about 5 cm)
- Use the soldering iron to disconnect the contact-holder and solder the wires to the new unit

Check the polarities: the red wire is connected to the + sign on the contact-holder

- Carefully position the new contact-holder and attach it with the posidrive screw

Replacing the contact points in the chassis

You will need:

- Ordinary screwdriver for slotted screw-heads
- 5.5mm spanner

Procedure:

- Loosen the contact-points holder in the foot of the column on the chassis by unscrewing the two screws holding the unit
- Pull it out carefully so that you will be able to disconnect the wires with the soldering iron
- Disconnect the old holder with the soldering iron and solder the wires on to the new unit.

Check the polarities: the red wire is connected to the + sign on the contact-holder

- Position the holder in the foot of the column and screw it in

Replacing the column wiper-brushes

You will need:

- Posidrive screwdriver

Procedure:

- Loosen the housing on the top of the column by unscrewing the four screws
- The wiper-brush strips can now be reached and pulled out
- Insert the new wiper-brushes and screw on the housing

Faults in the lifting column

If any mechanical faults or misalignments occur in the lifting column and/or runner-block/lifting-arm, no attempt must be made to repair them. Structural damage to these parts can impair the lifting strength, and therefore the parts must be returned to the manufacturer for assessment and repair as necessary. Contact Etac AS.

Completing the job

Safety checks

A safety check should be carried out after any type of repair or replacement. This check is to be performed according to the checklist on next page. The owner of the lifter shoul keep one filled out and signed checklist after each repair or service.

Keeping a log

Below there is a table for logging any repair work including the repair of any damage. Give a brief description of the work carried out so that it is possible to see what has been done over a period of time. Later on this could help service engineers when troubleshooting, and therefore make any subsequent work more efficient.

Date	Description of fault	Description of repair	Date/sign.

Inspection diagram after service and repair

MOLIFT Quick Raiser 1

Service:

- ☐ Checked service lamp if service is necessary: YES (yellow or red light) / NO (green light)
  Use Molift Servicetool and read the lifters data - check number of lifts left before service: _____
- ☐ Service is completed : - Worn or damaged parts, or malfunctioning parts, are replaced. See description for parts replacement.
- ☐ Service light was reset using Molift Servicetool. N.B.: The service light must ONLY be reset after completed service!
- ☐ Perform safety inspection after service.

Safety Inspection

- ☐ The lift has been visually checked for damages, malfunction and deformation, and it is in order. Checked that lifting column is properly fastened to chassis, and lifting arm to lifting column and that the lifter has no loose parts.
- ☐ Checked that remote control works and that wire and socket for remote control are undamaged.
- ☐ Moved the lift around a level and even floor with approx. 75 kg hanging in the suspension about 60 cm above the floor. The lifter moves in all directions in a stable manner without tipping or experiencing any instability.
- ☐ Run the lifter up and down several times with a test load, (QR2:120 kg and QR2+: 150 kg), on a level floor: Attach the special designed test hoop to the lifters knee support bracket, and hook the rope on to the Raiser arm. The weights, (i.e. sandbags or steel weights), are then hooked on to the test hoop by using strong ropes. See to that the weights do not touch the column or chassis during the test. After the test inspect the chassis, wheels, column, carrier and Raiser arm again for damage or deformation. If necessary, replace the damaged parts and do the test again until the lifter is functioning correctly.
- ☐ Test with test jig - Run the lift up and down 2 - 3 times and turn the suspension 360° around 2 - 3 times with maximum load. Perform a new visual control; damage, play and deformations as described above. Any damaged parts must be repaired or replaced and the test is performed once more until the lift performs correctly.
- ☐ Checked that emergency stop and lowering (electric and manual) are working correctly.
- ☐ Service light is green and batteries are sufficiently charged.
- ☐ Marked lift with safety sticker with month/year and certificate number for completed safety inspection. Inspecting person must sign safety sticker and this diagram.

Inspection, repair and service should be done by a person certified by, or on behalf of Etac AS. Always complete below:

Client:_____ Serial number of lifter:_____

Date: _____ Signature:_____

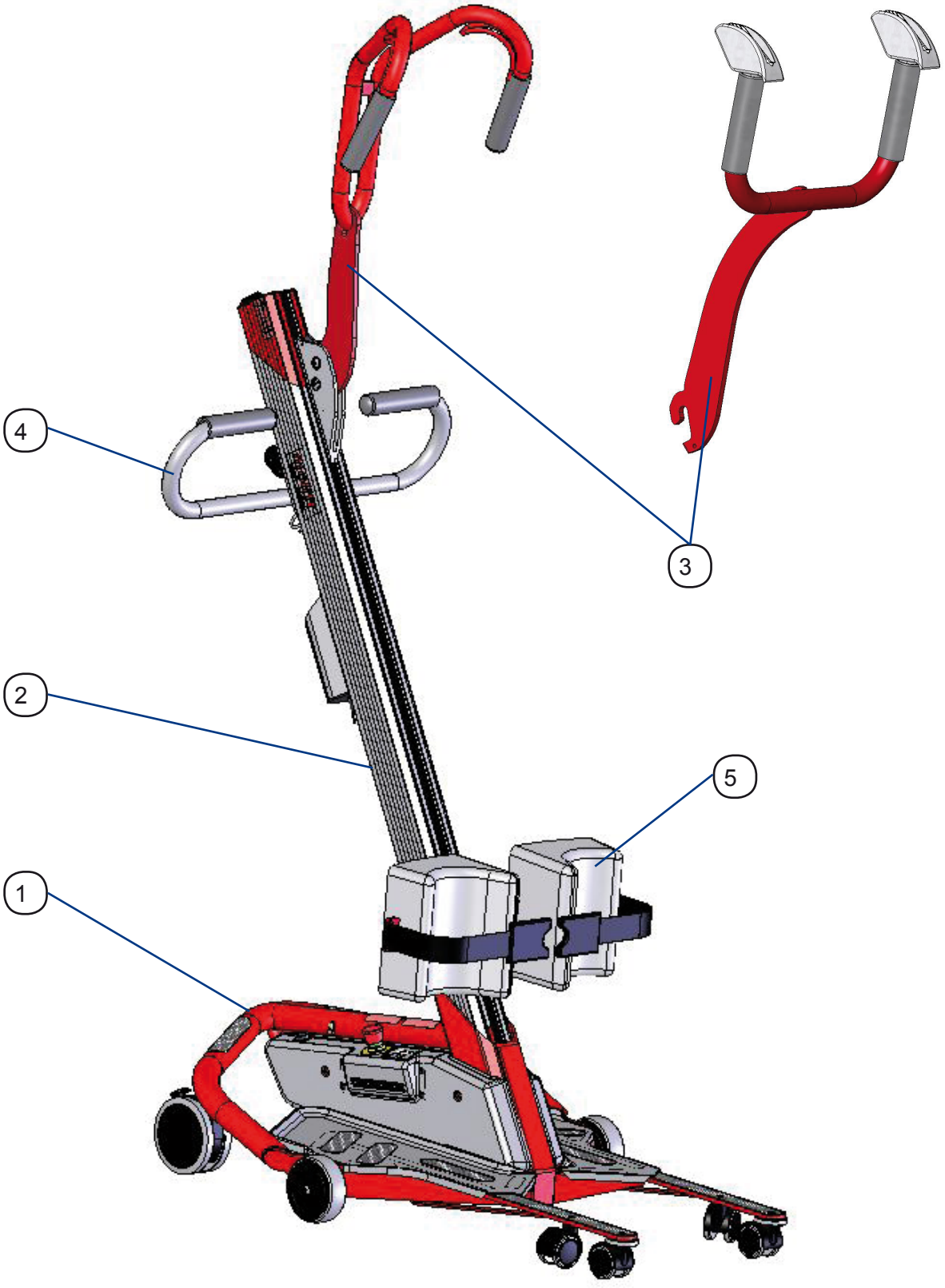
Parts catalogue

Molift Quick Raiser 1 09

Pos.	Qty	Art.no.	Description
1	1	0420200	Chassis - see app. B
2	1	0412014	Column - see app. C
3	1	0458010	Lifting Arm U-shape
		0458107	Lifting Arm V-shape (optional)
4	1	0425000	Drive Handle
5	1	0455000	Knee support complete w/small cushions
		0455001	Knee support complete w/large cushions (optional)

Pos.	Qty	Art.no.	Description

Main Components

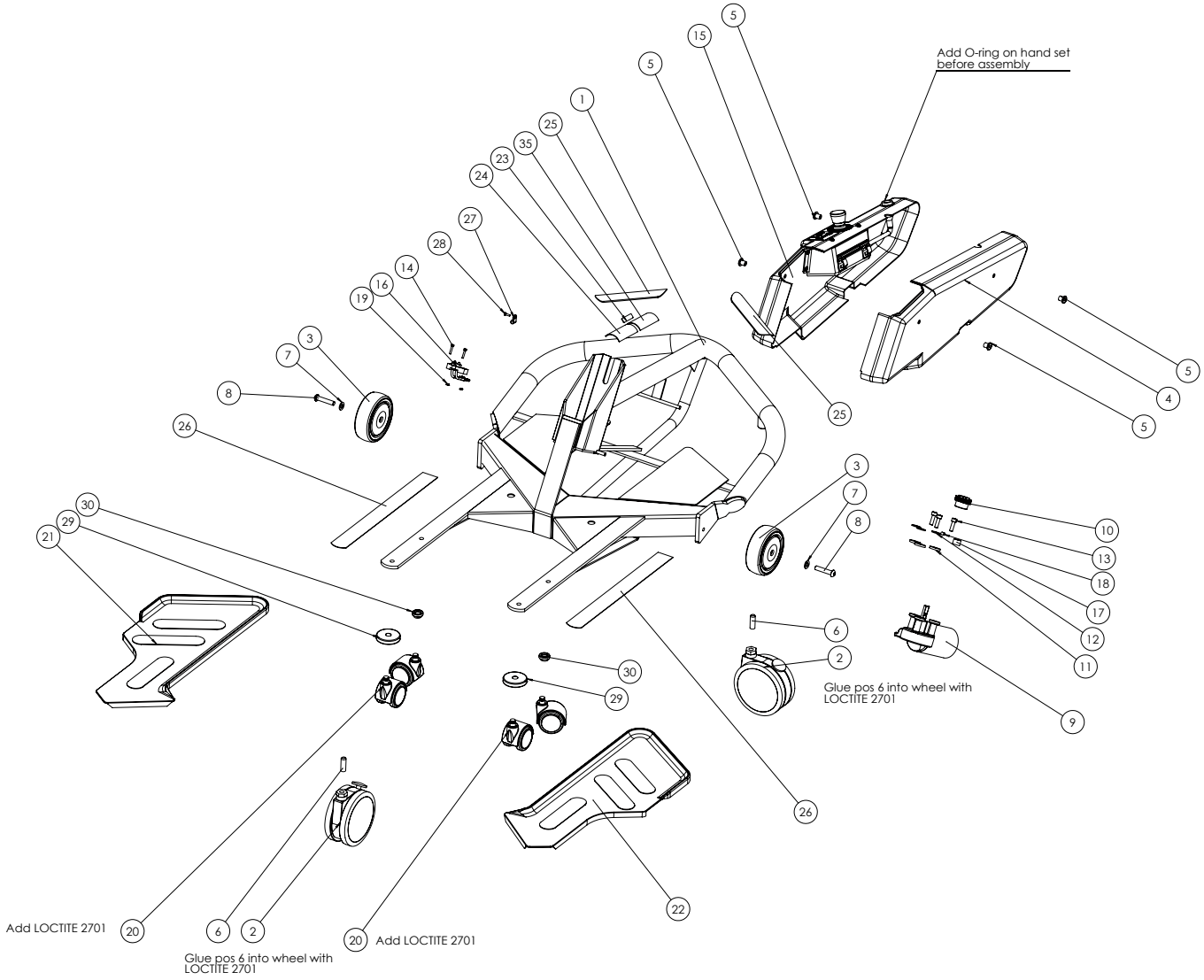


Appendix B

Pos.	Qty	Art.no.	Description
1	1	0420100	Chassis welded
2	2	0220208	Wheel w brake Ø115 Travelaid 115BR
3	2	0420102	Wheel Ø100 PJP100x32 Black Ø8
4	1	0420123	Cover left
5	4	0420104	Nut for cover, M6
6	2	0235104	Screw DIN 916 M10x30 Elzn
7	2	0310114	Washer DIN 433 Ø8,4 Plan hardened
8	2	0420106	Screw ISO 7380 M8x50 10,9 Black
9	1	0220110	Motor complete
10	1	0220111	Motor connector
11	3	0220118	Washer neoprene Ø22xØ5,5x3,5
12	3	0220121	Washer steel DIN 9021 Ø6,4 8.8 Elzn
13	3	0220120	Screw DIN 912 M6x20 8.8 Elzn
14	2	0420118	Screw DIN M3x16 Elzn
15	1	0420127	Cover with electronics QR1 - see app. D
16	1	0421133	Connection point chassis
17	1	1150129	Spacer nylom 13ME103
18	1	0220129	Screw DIN 916 M5x10 A2
19	2	0420117	Lock Nut DIN 985 M3 8 Elzn
20	4	0220207	Wheel Ø50 grey
21	1	0420029	Foot plate right assy
22	1	0420028	Foot plate left assy
23	1	0421135	Label ID
24	1	0420134	Main Label QR1
25	2	0420560	Anti Skid, incl pos 26
26	2		Anti Skid, incl in pos 25
27	1	1101432	Cable clip 4,8 55-021-90
28	1	0420120	Screw DIN 7981F 4,8x9,5 Elzn
29	2	0220146	Wall wheel pos 20
30	0		Distancer follows wheel pos 20
31			
32			
33	1	0440002	Hand Control
34			
35	1	0220310	Label safety
36	1	0620133	Cable clip 4,8
37	2	0220136	Strip 100x2,5
38	1	0440003	O-ring 10x2

Pos.	Qty	Art.no.	Description

Chassis w/ legs

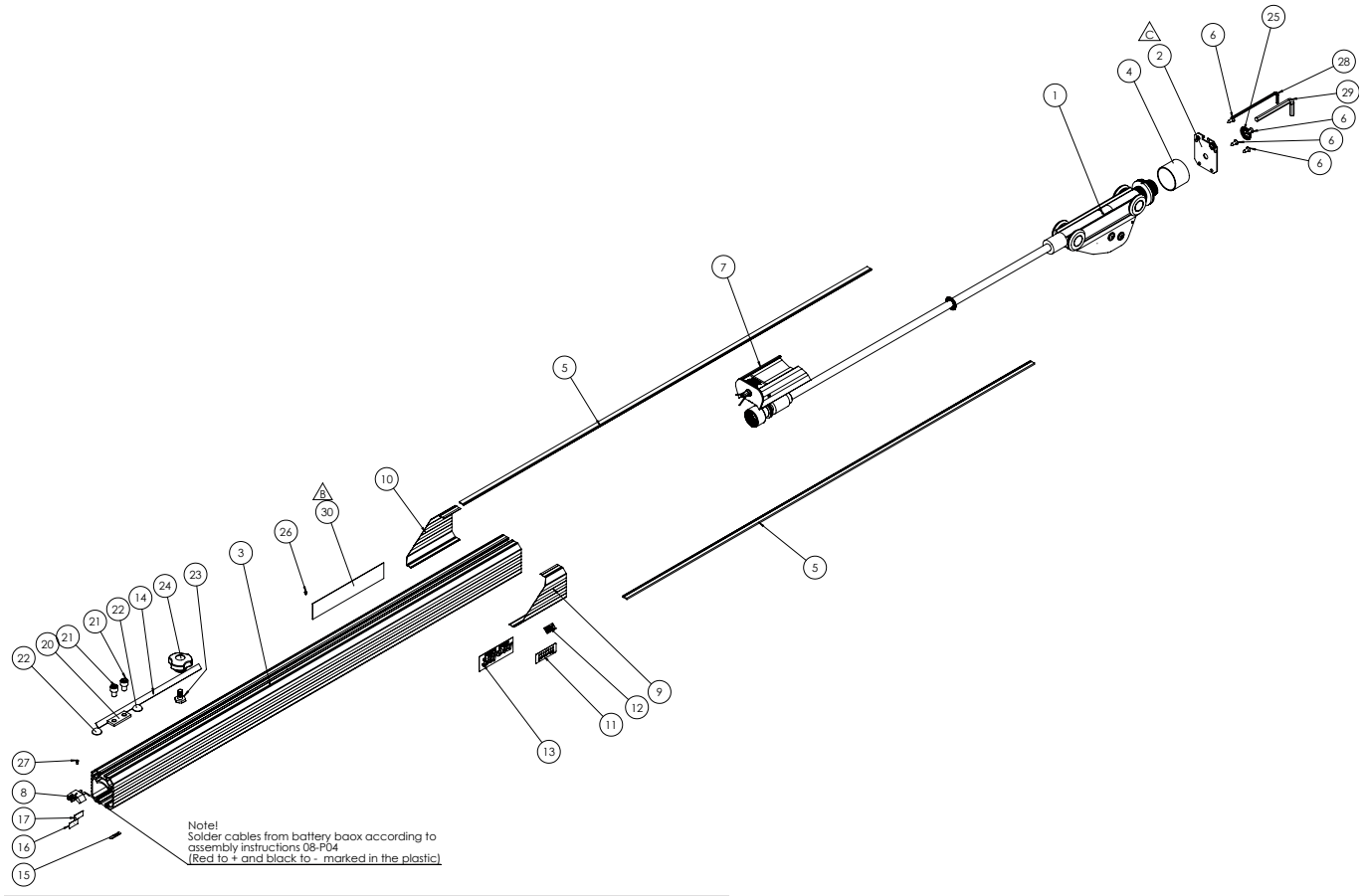

Add O-ring on hand set before assembly
Glue pos 6 into wheel with LOCTITE 2701
Add LOCTITE 2701
Glue pos 6 into wheel with LOCTITE 2701
Add LOCTITE 2701

Appendix C

Pos.	Qty	Art.no.	Description
1	1	0412011	Ball screw assy
2	1	0210125	Top cover
3	1	0411101	Profile column
4	1	0410106	Distancer
5	2	0411104	Column brush 0.7,0.10 Nylon 1200
6	4	0710530	Screw Pan head cross ISO 7045 M5x16
7	1	0510500	Battery Holder complete 14,4 V - see app. D
8	1	0510520	Connection point
9	1	0210302	Red label right
10	1	0210301	Red label left
11	1	0210305	Label sling
12	1	1310303	Label emergency lowering
13	1	0410308	Label Quick Raiser
14	1	0420310	Label scale 1-30
15	1	0210304	Label red arrow
16	1	1310306	Label Art. no. / batch no.
17	1	1310307	Label controlled/sign
18			
19			
20	1	0420150	Bracket
21	1	0220102	Screw DIN 912 M10x14
22	1	0410306	Rubber Bunpron Grey
23	1	0235107	Bolt for handle / nee pillow holder
24	1	0235102	Hand wheel
25	1	0210307	Label emergency lowering
26	1	0220151	Screw DIN 7981C Ø3,5x6,5 Elzn
27	1	0220150	Screw DIN 965A M3x8 Elzn
28	1	0210124	Allen Key 4 mm
29	1	0220127	Allen Key 8 mm
30	1	0420320	Label user manual

Pos.	Qty	Art.no.	Description

Lifting column


Note!
Solder cables from battery baox according to assembly instructions 08-P04
(Red to + and black to - marked in the plastic)

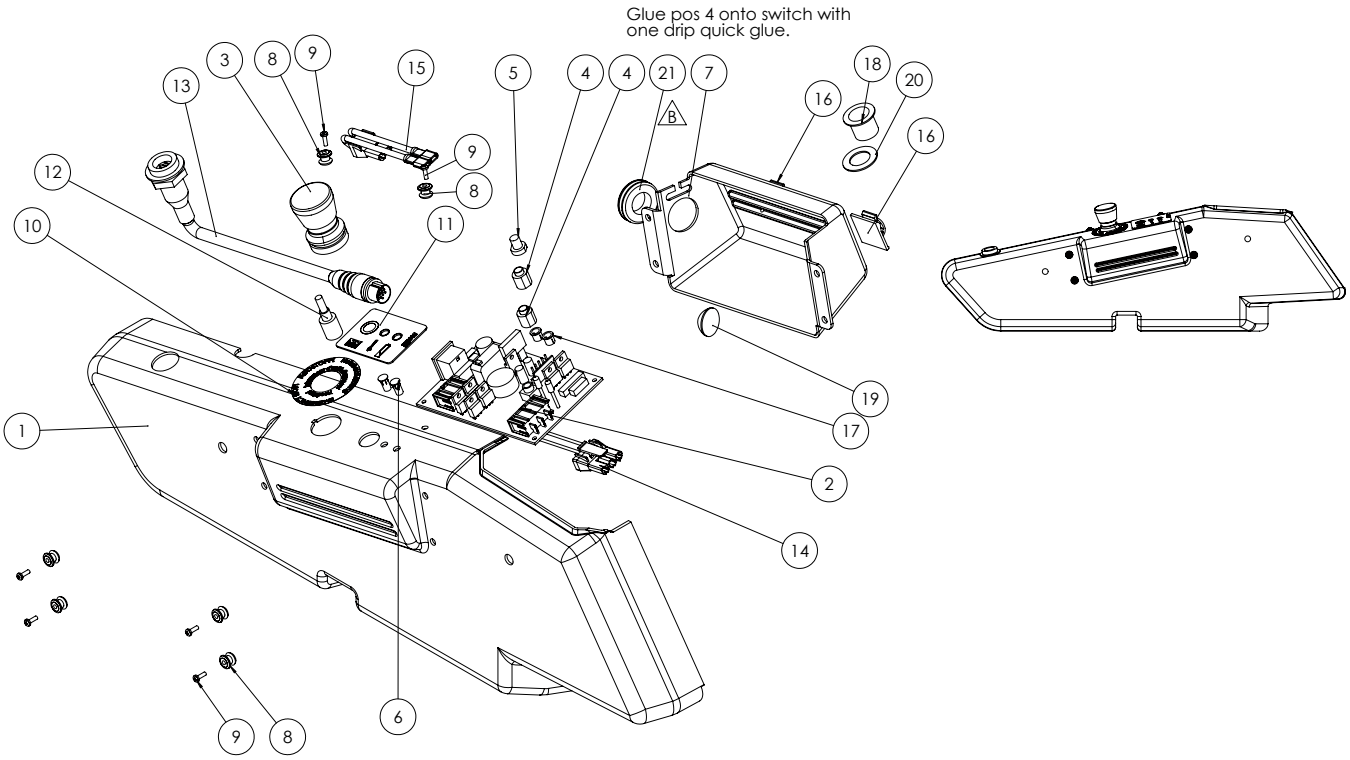
Appendix D

Pos.	Qty	Art.no.	Description
Fig 1			COVER WITH ELECTRONICS QR1
1	1	0420124	Cover right QR1
2	1	1320112	Main PCB (Control card)
3	1	0920114	Emergency Stop Switch
4	2	1310135	Extension Cap 10 mm
5	1	1310136	End Cap
6	2	0421137	LED Guide
7	1	0421119	Cover PCB
8	6	0421120	Plastic rivet 5x4-7 Black
9			Screw - part of 0421120, pos 8
10	1	0220307	Label Emergency Stop
11	1	0421121	Label service-em. lowering
12	1	0421122	Extension Emergency Stop Switch
13	1	0421123	Cable extension 13-pin DIN
14	1	0421124	Battery cable
15	1	0421125	Cable Motor 1
16	2	0620134	Self-Adhesive Clamp 9,6
17	2	0420593	Panel holder for diode Ø5mm
18	1	0421138	Bushing GFW-1517-17
19	1	0410306	Bumpon Type SJ-5027 Grey
20	1	0421139	Tape TESA
21	1	0420135	Cable gland
Fig 2			BATTERY HOLDER
1	1	0510101	Profile/holder
2	6	0540501	Screw Wallboard Elzn
3	1	0510205	Lower part plastic
4	1	0510510	Upper cover mounted
5			
6			
7			
8	1	0540505	Rubber bushing
9	2	0540120	Screw DIN965A Elzn
10	2	0540123	Nut w threads brass
11	1	0510302	Decal
12	1		Wire red 0,75 L=750
13	1		Wire black 0,75 L=750
14	1		Heat crimp tube
15	1	1310306	Decal art.no

Pos.	Qty	Art.no.	Description

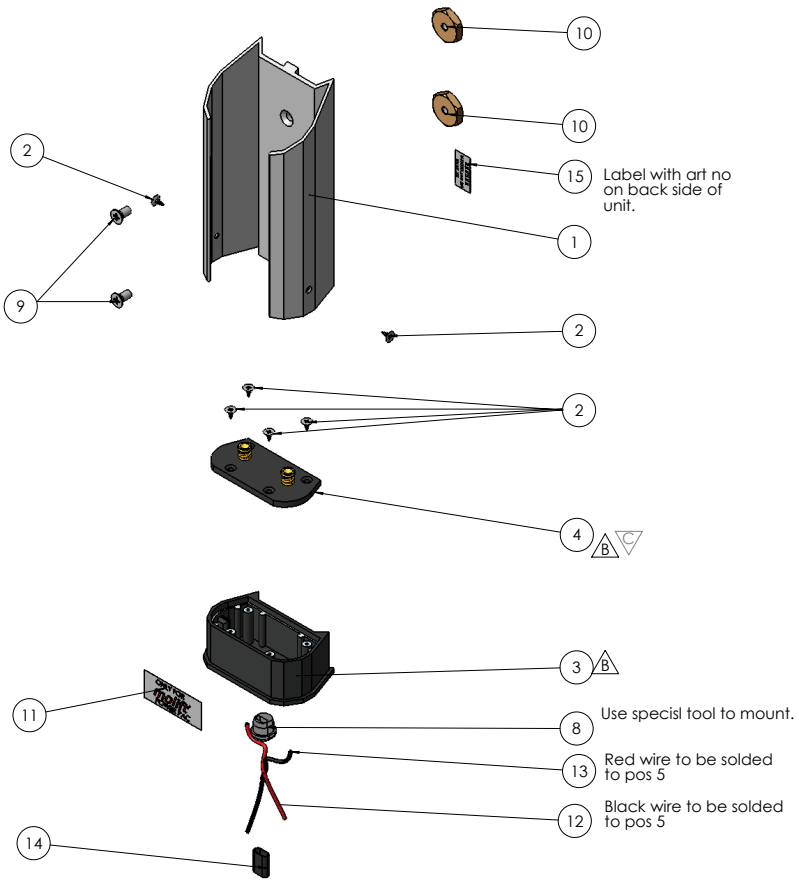
Cover with electronics QR2

Fig 1



Battery holder

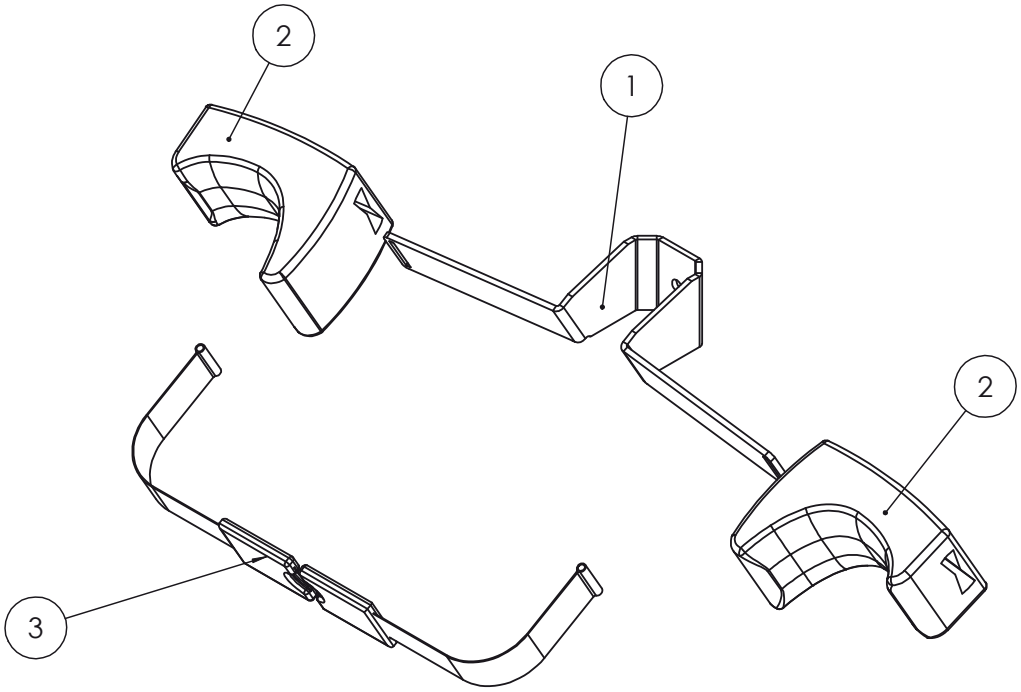
Fig 2



Appendix E

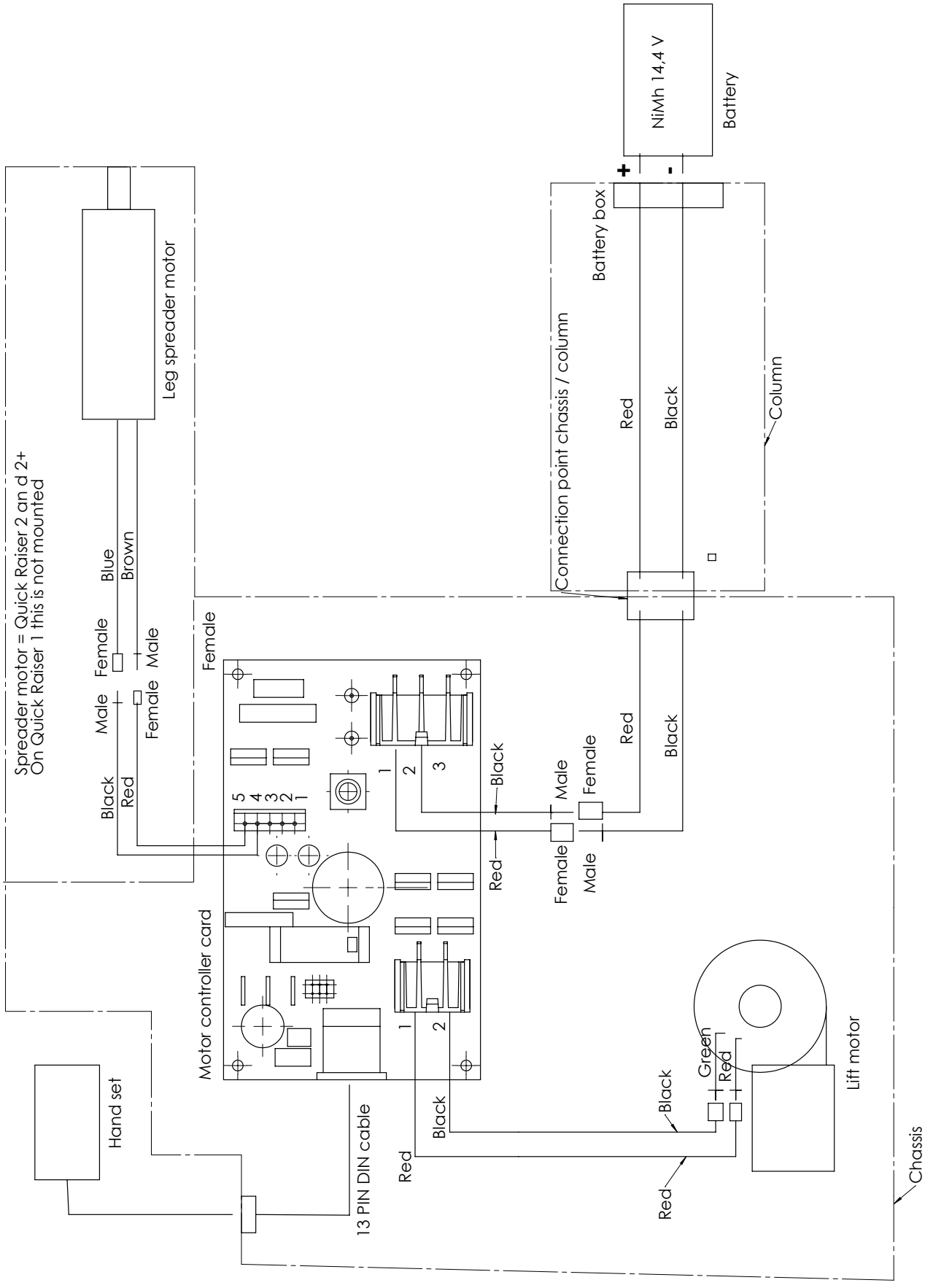
Pos.	Qty	Art.no.	Description
Fig 1			KNEE SUPPORT COMPLETE
1	1	0455100	Knee support bracket QR1
2	2	0251105	Cushion f knee support Small
2	2	0455105	Cushion f knee support Large (optional)
3	1	0455109	Strap for knee support

Knee support complete
Fig 1



Appendix F

Electrical Diagram



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